



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,753	03/09/2004	Jiangqi He	111079-135674	4229
25943	7590	01/24/2006	EXAMINER	
SCHWABE, WILLIAMSON & WYATT, P.C. PACWEST CENTER, SUITE 1900 1211 SW FIFTH AVENUE PORTLAND, OR 97204			SEMENENKO, YURIY	
			ART UNIT	PAPER NUMBER
			2841	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

5/

**Office Action Summary**

Application No.

10/797,753

Applicant(s)

HE ET AL.

Examiner

Yuriy Semenenko

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 9-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/15/04 page 1</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. 1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-8 drawn to a apparatus, classified in class 361 subclass 794.
- II. Claims 9-15 drawn to an assembly, classified in class 361 subclass 794.
- III. Claims 16-19 drawn to a system, classified in class 361 subclass 794.
- IV. Claims 20-21 drawn to a method, classified in class 29 subclass 825.

1.2. The inventions are distinct, each from the other because of the following reasons: Inventions groups IV and I-III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process as claimed can be used to make other and materially different product. For example, process as claimed can be used for a apparatus without a dielectric layer.

1.3. Inventions groups II-III and group I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because combination (an assembly) may work without subcombination (a apparatus) as claimed in claim 7 but instead of using a apparatus without second slot. The subcombination (a apparatus) has separate utility such as in assemblies without a processor.

1.4. Inventions group III and group II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because combination (a system) may work without subcombination (an assembly) as claimed in claim 16 but instead of using assembly without a networking interface. The subcombination (an assembly) has separate utility such as in system with apparatus with second slot.

1.5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and the search required for Groups I- III is not required for Group IV, restriction for examination purposes as indicated is proper.

1.4. During a telephone conversation with R. Watt (Registration No. 45,890), on December 19, 2005, a provisional election without traverse was made to prosecute the invention of Group I, claims 1-8, drawn to an apparatus. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-21 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2.1. Claims 1-4 and 6-7 are rejected under 35U.S.C. 103(a) as being obvious over Admitted by Applicant (Prior Art, hereinafter "APA") in view of Carey (Patent # 5272600) hereinafter "Carey" and in view of Rothermel et al. (Patent 6384341) hereinafter "Rothermel".

2.1.1. Regarding claim 1: APA discloses in Fig. 1B an apparatus comprising: a signal layer 160 including a first 140 and a second 142 signal trace; and a dielectric layer 170 having at least a first portion disposed between the signal layer and the first reference plane,

except, APA does not teach a first reference plane including a first slot substantially parallel to the first and second signal traces.

Carey teaches in Fig. 1 a first reference plane 20 including a first slot (between 20 and 16) substantially parallel to the first 18 and second 18 signal traces (column 8, lines 1-22).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that a first reference plane including a first slot substantially parallel to the first and second signal traces as taught by Carey because Care teaches that such a configuration would result in the benefit of impedance control ( column 1, lines 50-68).

2.1.2. Regarding claims 2, 3 and 4: APA as modified, discloses the apparatus having all of the claimed features as discussed above with respect claim 1,

except, each of the first and second signal traces comprise a first portion with a first width, and a second portion with a second width and the first slot comprises a first portion and a second portion having a first slot width and a second slot width, respectively and the first and second portions of the first slot correspond to the first and second portions, respectively, of the first and second signal traces and each of the first and second signal traces further comprises a third portion with a third width and the first slot comprises a third portion, comprising a third slot width, corresponding to the third portion of the first and second signal traces.

Carey teaches in Fig. 1 each of the first 18 and second 18 signal traces comprise a first portion (on the left side) having a width  $w_1$ , and a second portion (on the right side) with a second width  $w_2$  and the first slot (between 20 and 16) comprises a first portion (on the left side) and a second portion (on the right side) having a first slot width  $sw_1$  and a second slot width  $sw_2$ , respectively, and the first and second portions of the first slot correspond to the first and second portions, respectively, of the first and second signal traces and each of the first 18 and second 18 signal traces further comprises a third portion (on the middle of the trace 18) with a third width  $w_3$  and the first slot (between 20 and 16) comprises a third portion (on the middle of the trace 18), comprising a third slot width  $sw_3$ , corresponding to the third portion of the first and second signal traces 18.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that each of the first and second signal traces comprise a first portion with a first width, and a second portion with a second width, [as claimed claim 2] and the first slot comprises a first portion and a second portion having a first slot width and a second slot width, respectively [as claimed claim 3] and the first and second portions of the first slot correspond to the first and second portions, respectively, of the first and second signal traces [as claimed claim 4], and each of the first and second signal traces further comprises a third

Art Unit: 2841

portion with a third width and the first slot comprises a third portion, comprising a third slot width, corresponding to the third portion of the first and second signal traces [as claimed claim 5].

Benefit of doing so is to alter the impedance by altering the width.

2.1.3. Regarding claim 6: And further, APA as modified, discloses the apparatus of claim 1 wherein the first 140, Fig. 1B and second signal traces 142 have a first and a second signal trace width wherein the first signal trace width is substantially the same as the second signal trace width, Fig. 1B.

2.1.4. Regarding claim 7: APA as modified, discloses the apparatus having all of the claimed features as discussed above with respect claim 1. Although, APA doesn't explicitly teach the signal layer further includes a third and a fourth pair of signal traces and a second slot, at time the invention was made, it was well know, that the signal layer may includes a plurality of pair of signal traces (for example, Rothermel, Fig. 2 and column 5, lines 63-67). Futher, in re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It has been held [Although the reference did not disclose a plurality of [ribs], the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced]

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for APA to include in his invention the signal layer further includes a third and a fourth pair of signal traces and a second slot.

Benefit of doing so is to possibility to build-up more sophisticated circuit boards.

2.2. Claim 2 is rejected under 35U.S.C. 103(a) as being obvious over APA in view of Carey and in view of Pinney et al. (Patent #5547405) hereinafter "Pinney".

2.2.1. Regarding claim 2: APA as modified, discloses the apparatus having all of the claimed features as discussed above with respect claim 1,

except each of the first and second signal traces comprise a first portion with a first width, and a second portion with a second width.

Pinney discloses in Fig. 4 each of the first A and second C signal traces comprise a first portion with a first width, and a second portion with a second width.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that each of the first and second signal traces comprise a first portion with a first width, and a second portion with a second width as taught by Carey because Care teaches that such lateral extension of the traces will cancel a large portion of crosstalk (column 1, lines 55-66) a would result in the benefit of impedance control.

2.3. Claim 1 and 8 are rejected under 35U.S.C. 103(a) as being obvious over APA in view of Itoh (Patent #5828555) hereinafter "Itoh".

2.3.1. Regarding claim 1: APA discloses in Fig. 1B an apparatus comprising: a signal layer 160 including a first 140 and a second 142 signal trace; and a dielectric layer 170 having at least a first portion disposed between the signal layer and the first reference plane,

except, APA does not teach a first reference plane including a first slot substantially parallel to the first and second signal traces.

Itoh teaches in Fig. 5 a first reference plane 31 including a first slot 40 substantially parallel to the first 33 and second 33B signal traces ( Fig. 6 and column 4, lines 60-62).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that a first reference plane including a first slot substantially parallel to the first and second signal traces to prevent noise.

2.3.1. Regarding claim 8: APA as modified, teaches everything as explain above, except two things: first - a second reference plane including a second slot substantially



Art Unit: 2841

parallel to the first and second signal traces and second - the dielectric layer further includes a second portion disposed between the signal layer and the second reference plane.

Itoh teaches in Fig. 5 a second reference plane 34 including a second slot 41A, Fig. 6 substantially parallel to the first and second signal traces; and the dielectric layer, further includes a second portion 35, Fig. 2 disposed between the signal layer and the second reference plane.

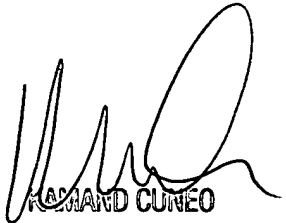
Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that a first reference plane including a first slot substantially parallel to the first and second signal traces to prevent noise.

3.1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuriy Semenenko whose telephone number is (571) 272-6106. The examiner can normally be reached on 8:30am - 5:00pm.

3.2. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571)- 272-1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

3.3. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YS

  
KAMAND CUNEO  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800